

**Abstract**

Disclosed is an electromagnetic ultrasonic transducer for coupling-media-free generation and/or reception of ultrasonic waves in the form of linearly polarized transverse waves in a, respectively from a workpiece, having at least one unit which converts the ultrasonic waves inside the workpiece and which is provided with a coil arrangement for generating, respectively detecting a high-frequency magnetic field as well as with a premagnetizing unit for generating a quasi-static magnetic field which superimposes upon the high-frequency magnetic field in the workpiece, with the coil arrangement being disposed in a torus-shaped manner on at least one partially toroidal or U-shaped magnetic core, which each has two front ends which can be turned to face the workpiece.

The invention is distinguished in that the front ends of the magnetic core which can be turned to face the workpiece are connected directly or indirectly to a magnetic flux piece which has a surface which faces the workpiece and which connects the front ends with each other.